POST: **Research Fellows, Postdoctoral Researchers & Postgraduate Students**

LOCATION: **Biomedical Diagnostics Institute in:**

- **NCSR, Dublin City University**
- **Tyndall National Institute, Cork**
- **NCBES, National University of Ireland, Galway**
- **Royal College of Surgeons Ireland, Dublin**

NATURE: **Full-time Temporary**

The Biomedical Diagnostics Institute (BDI) was established in October 2005 at Dublin City University, through an award of €16.5M from Science Foundation Ireland (SFI) under its Centres for Science, Engineering and Technology (CSET) programme, in addition to a €6.5M contribution from industry partners.

The BDI will carry out cutting-edge research programmes focussed on the development of next-generation biomedical diagnostic devices. These devices, which will directly affect the quality of people's lives, will be used in Point of Care applications as well as for self-test, home use. The availability of innovative diagnostic devices measuring indicators of chronic disease (e.g. cancer, cardiovascular disease) will allow for life-threatening events to be detected long before a critical stage is reached.

Realisation of our vision requires substantial breakthroughs in the fundamental science and technology underpinning diagnostic devices. In order to meet this ambitious challenge, we are currently assembling a team of world-class research scientists to partner with cutting-edge research teams from our industry partners (Analog Devices, Åmic, Enfer, Hospira, Becton Dickinson & Inverness Medical Innovations) and collaborating institutions (The Royal College of Surgeons Ireland (RCSI) in Dublin, the National Centre for Biomedical Engineering Science (NCBES) at NUI, Galway, and the Tyndall National Institute (TNI) in Cork). The combined team will carry out a coordinated research programme over a 5-year period that began on October 1, 2005. The BDI team will be based primarily in DCU, with some researchers located in our collaborating institutions, as specified below. Some applicants for the Postdoctoral positions may be offered employment by our industrial partners.

REQUIREMENTS:

Postdoctoral Researchers and Research Assistants with expertise in one or more of the areas detailed in the research programmes listed below are invited to contact the appropriate Principal Investigator for informal discussions. Postgraduate Students with an interest in any of these areas are also encouraged to contact the appropriate Principal Investigator for further information.

RESEARCH PROGRAMMES:

1. **Biomolecular Recognition (Ref: BDI-RP1)**

Goal: To develop novel antibody and nucleic acid-based assays and to incorporate them into biochip platforms

Expertise:

- Antibody production/engineering and immunoassay development
- Nucleic acid-based analysis
- Immobilisation and surface chemistry of biomolecules

Principal Investigator: Prof Richard O'Kennedy (richard.okennedy@dcu.ie)

Location: A number of the Postdoctoral Researchers working on this programme will be based in Tyndall National Institute in Cork, with the remainder of the team based primarily in Dublin City University.

2. Functional Diagnostics in Platelet Biology (Ref: BDI-RP2)

Goal: To develop novel physiologically relevant assays of platelet function

Expertise:

- Cell biology of platelet function & thrombosis
- Molecular Protein chemistry
- Rheology

Principal Investigator: Prof Dermot Kenny (dkenny@rcsi.ie)

Location: Research staff and students working on this programme will be primarily based in Royal College of Surgeons Ireland in Dublin.

3. Transduction Science (Ref: BDI-RP3)

Goal: To develop sensitive and selective detection strategies for proteins and DNA through combinations of current and light detection.

Expertise:

- Electrochemiluminescent materials especially luminescent polymers
- Interfacial characterisation techniques – Raman and scanning probe microscopy Electrochemical/luminescent bioassay development

Principal Investigator: Prof Robert Forster (robert.forster@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

4. Signal Amplification Science (Ref: BDI-RP4)

Goal: To develop substantial sensitivity enhancements in a range of optical biochip systems, with the emphasis on fluorescence-based platforms.

Expertise:

- Metal-enhanced fluorescence – Plasmonics
- Optoelectronic readout instrumentation for biochips
- High-brightness nanoparticle labels

Principal Investigator: Prof Brian MacCraith (brian.maccraith@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

5. **Microfluidic Platforms (Ref: BDI-RP5)**

Goal: To develop advanced microfluidic platforms for diagnostic applications.

Expertise:
- Microfluidics and microfabrication
- Integrated detection techniques
- Cell biology

Principal Investigators: Prof Luke Lee (luke.lee@dcu.ie) & Prof Tony Ricco (antonio.ricco@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

6. **Coagulation Monitoring (Ref: BDI-IP1)**

Goal: To develop advanced coagulation monitoring devices for chronic and critical care applications (including wearable closed-loop anticoagulant therapy systems).

Expertise:
- Rheological, viscoelastic and haemostatic properties of blood
- Polymer MEMS & microfluidics
- Biodevice interfacial modification
- Integration of sensors and wireless technology

Principal Investigator: Dr Tony Killard (tony.killard@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

7. **Biochip for Cardiac Wellness (Ref: BDI-IP2)**

Goal: To develop a multianalyte, capillary-fill biochip for monitoring markers of cardiac wellness.

Expertise:
- Microfluidics
- Optical biosensors based on fluorescence
- Immobilisation of biomolecules

Principal Investigator: Prof Brian MacCraith (brian.maccraith@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

8. **Bovine Mastitis Diagnostics Chip (Ref: BDI-IP3)**

Goal: To develop a multi-analyte miniaturised assay platform for the detection of mastitis.

Expertise:
- Immuno/Nucleic Acid-based assay development and validation
- Analyte extraction & sample preparation
- Microbiological and Biochemical analysis

Principal Investigator: Prof Richard O'Kennedy (richard.okennedy@dcu.ie)

Location: Research staff and students working on this programme will be primarily based in Dublin City University.

Please contact the relevant Principal Investigator for informal discussions.

CLOSING DATE: 25th November 2005

Postgraduate Students should consult the Registry section on www.dcu.ie for application procedures. In the first instance, please contact the relevant Principal Investigator.

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